factors, including those related to distance and transport, make it impossible to arrange for any one student to be present at more than one session. At the time of his visit the student is encouraged to discuss the individual problems he has seen and any general considerations which particularly interest him.

All students have taken advantage of the opportunities offered them. They know they are taking part in an educational experiment. No attempt has been made to influence them in their views, and particular care has been taken not to initiate comparisons concerning different services for the care of child life. The students have willingly co-operated when asked after their visit to give a written account not so much of their impressions concerning detail as of their reactions to inclusion of the visit in the course of their training.

The Student's Reaction

A point of practical importance is that at no time has there been any unfavourable reaction to the presence of students on the part of mothers attending the clinic. As to the students themselves, while some few were constructively critical of certain aspects of the arrangements made for them, all testified to the value of their visits to the clinic. Many were unreservedly enthusiastic. Significance attaches to the reasons given for their opinions.

Almost all the students stressed that the visits had given them their first opportunity to "see general practice in operation." Of those who made this comment a number wrote of having appreciated for the first time the part which the family doctor can play in the care of child life in health and disease. Reading their remarks, it is evident that a number of students had had borne in on them how many of the children they see in the hospital out-patient department could be properly dealt with in the more suitable environment of a family doctor's consulting-room. Others, again, were impressed by seeing conditions which are rarely encountered in hospital but which, although they may have no serious immediate clinical significance, bulk more largely in general practice.

Most of the students remarked upon the advantages to child care of the mutual understanding and trust which it is within the power of the general practitioner to establish with the families he attends. Other students appreciated the initial advantage possessed by the family doctor whose care of children starts in the form of antenatal supervision of the mothers and who knows the background and capabilities of families in his practice. A number of students, men and women, sensed the benefits to infant feeding of supervision being undertaken by a doctor herself the mother of a family. Women among the students realized that marriage and a family do not necessarily debar a woman from making a vital and special contribution to child care in general practice.

We consider that the various views expressed by those visiting the clinic support the opinion that the experiment has justified itself. Evidence in favour of this opinion is to be found from the following extracts from notes sent in by three of the students who have taken part in the experiment. Telling of his outlook before visiting the clinic, one student wrote: "As a medical student one of the impressions I had conceived of general practice was that any case which required a little more trouble taken over it than normal was immediately referred, especially in paediatrics, to the already overworked hospital."

Another student wrote: "It [the visit] helped my sense of proportion in realizing the great value of the general practitioner in the promotion of child health." A third student summed up his impressions as follows: "The visit made me realize that general practice is not static and can be made progressive . . . and can provide intellectual satisfaction."

Summary

Measures for the care of child life must be based upon the home. The family doctor has a vital part to play in any such measures. If it is to fulfil its primary function medical training of the undergraduate must be directed towards preparation for family practice. Teaching instruction in the care of child life is handicapped by difficulties in the way of giving the medical student practical insight into conditions prevailing in family practice.

An educational experiment is described which is intended to offset these difficulties in part at least. It is considered that the experiment has been a success, is capable of further development, and might be extended to a wider field of medical training than that concerned solely with health and disease in childhood.

INTERMENSTRUAL PAIN (THE "MITTELSCHMERZ") AND THE TIME OF OVULATION

BY

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Cyclically recurring pain in the pelvis which can be related to the phases of the menstrual cycle is not uncommon in women. The condition was described by Priestley as long ago as 1872, although it is just possible that his observations were confused by the coexistence in his patients of chronic appendicitis, which at the time he wrote had not been defined as a clinical entity. Subsequent reports, in which corresponding pelvic pains have been referred to, mainly concern acute conditions that have called for operation, and in many instances laparotomy at the time of the pain has disclosed a recently ruptured ovarian follicle.

The periodicity of intermenstrual pelvic pain is one of the many signs that have been taken to indicate the time of ovulation in women. In view of the very clear-cut symptoms over a long period it is of interest to report the following case history.

Description of Present Case

The patient is a married woman aged 28 in whom cyclical intermenstrual pain has been recorded without interruption during the last 4½ years. It has occurred over at least seven years, but at first it was irregular. She has no recollection of similar pains before the age of about 16.

The pain is characteristic and easily recognized. It lasts for no more than 24 hours, and varies somewhat in intensity from time to time. It is never severe and can be controlled with simple analgesics. It begins suddenly in one or other iliac fossa and is gradually referred to the pubes, from which it spreads as a generalized pelvic pain.

The occurrence of the pain and the menstrual periods from April, 1944, to November, 1948, are charted in Fig. 1. The Table shows the duration of the two "phases" of the cycle. The following points may be noted.

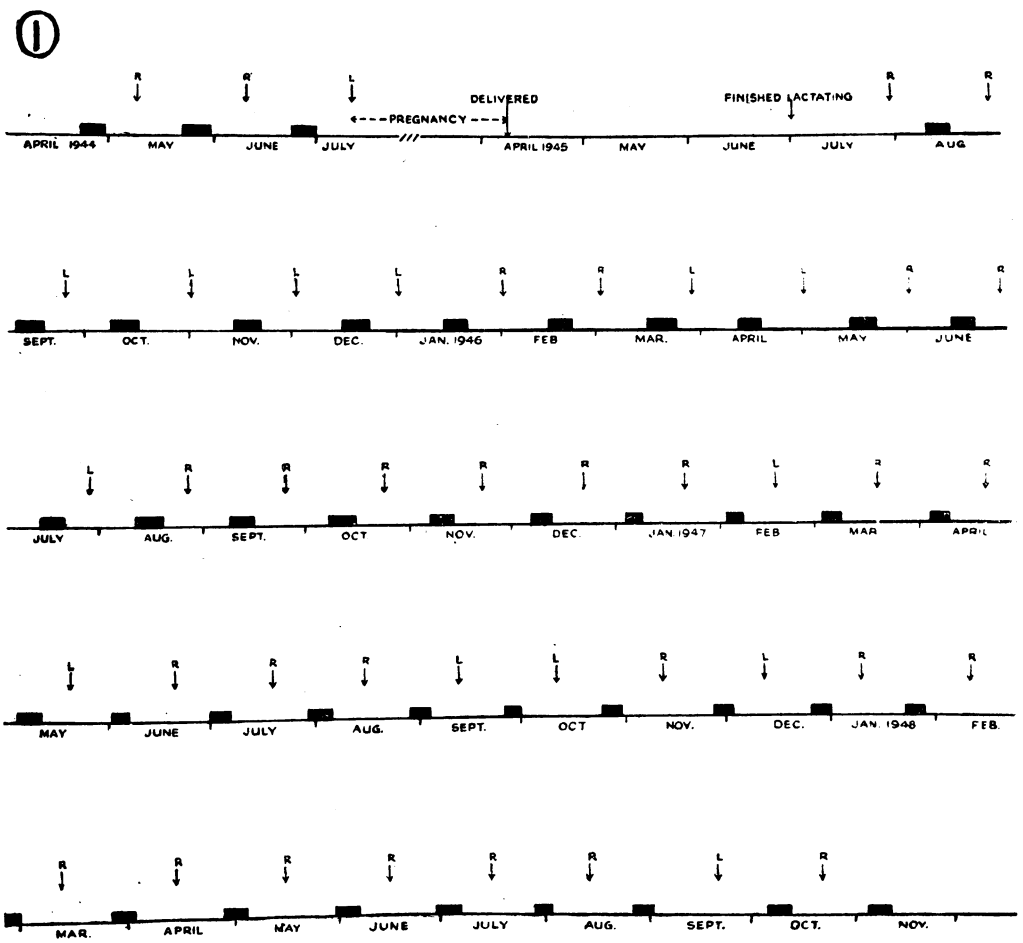
Table Showing Distribution of Duration of Phases of Menstrual Cycle

	Duration in Days												
	10	11	12	13	14	15	16	17	18	19	20	24	25
1st day of menstruation to mittelschmerz					1	6	8	13	6	4	2	2	2
Mittelschmerz to onset of menstruation	1		10	22	7	1	1						

1. The onset of the pain is regular. The mean interval from menstruation to the onset of the pain is 17.3 ± 0.33 days, and from the pain to the beginning of menstruation 13.0 ± 0.15 days. In agreement with most other statistics on the duration of the pre-ovulatory and post-ovulatory phases of the menstrual cycle, the second phase has a significantly smaller variance than the first pre-ovulatory phase (see Table). Although the length of one of the later cycles was prolonged to 39 days, the mittelschmerz occurred as usual 13 days before the next period. Presumably the extra length of the cycle was due to some interference with normal follicular development.

2. In July, 1944, the patient wished to become pregnant and was advised to regard the mittelschmerz as the most likely indication of the time of ovulation. Ten days after the mittelschmerz in that cycle, and before the next period was due, the patient correctly believed that she was pregnant. No further pains were noted during either her pregnancy or her lactation. About three weeks after the end of lactation the pain was again recorded, and was followed ten days later by the return of menstruation. Since then it has continued its regular rhythm without interruption.

3. The pain has occurred 29 times on the right side and 14 times on the left. This predilection for the right side is significantly different from a 1 : 1 ratio for the two sides. Similar differences in favour of the right side have been reported for ovulation in the sheep (McKenzie and Terrill, 1937) and the monkey (Morse and van Wagenen, 1936), and, assuming that the pain indicates ovulation, the observed ratio in this case does not differ significantly from the figures reported by these workers. There does not seem to be any regularity of alternation from left to right side. The pain has never occurred twice in one cycle.



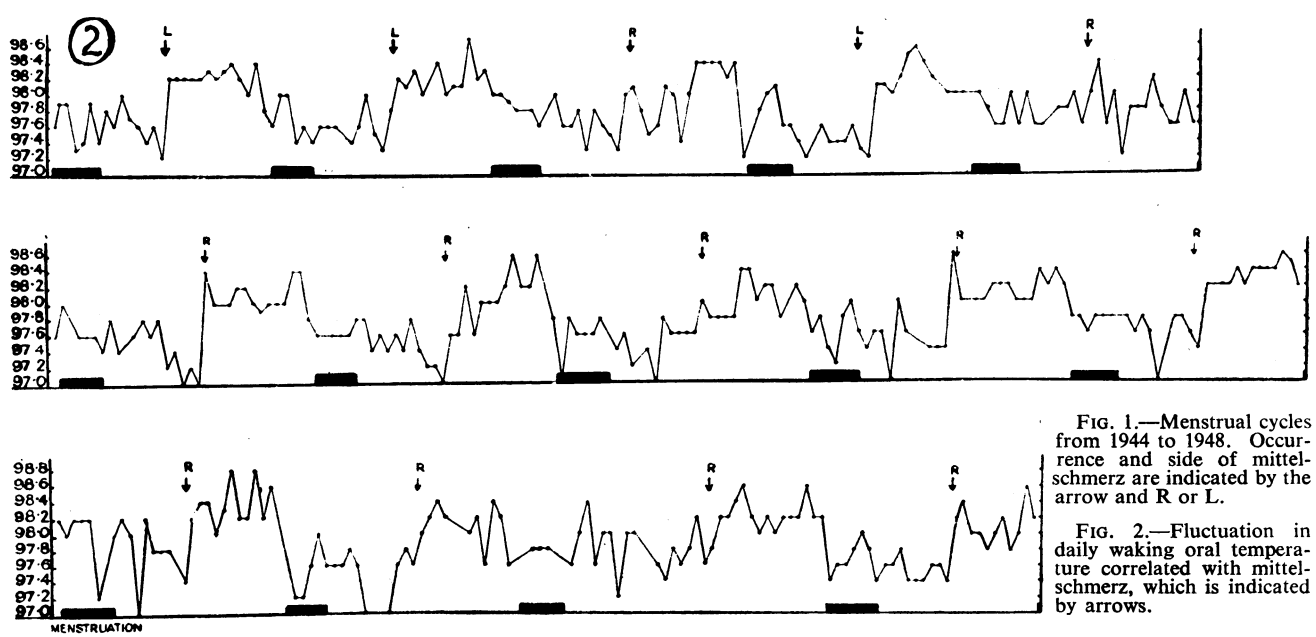


FIG. 1.—Menstrual cycles from 1944 to 1948. Occurrence and side of mittelschmerz are indicated by the arrow and R or L.

FIG. 2.—Fluctuation in daily waking oral temperature correlated with mittelschmerz, which is indicated by arrows.

Correlation of Mittelschmerz with Fluctuations in the Waking Oral Temperature

Since fluctuations in the body temperature are now widely used to indicate the time of ovulation a record of the daily waking oral temperature has been kept for the last 13 cycles. The results are plotted in Fig. 2, the mittelschmerz being indicated by arrows.

The temperature recordings conform in general to the usually accepted pattern, though they are not so clear-cut as some that have been published. In the middle of the cycle, however, there is usually a slight fall in temperature, followed by a steep rise to a plateau, which is maintained until near the onset of the subsequent period. Occasionally this rise is indistinct.

An independent observer was asked to estimate the most likely time of ovulation from temperature charts alone. In eight of the 14 cycles ovulation, as judged in this way, agreed with the day of onset of the mittelschmerz. In three cycles the estimate was one day early, and in three it was one day late.

A change in the temperature curve, particularly when the whole chart is available and when attention is directed to the mid-cycle, is at best only indirect evidence of ovulation, but the close relation between the temperature change and the mittelschmerz is of interest.

Discussion

Early workers who described the mittelschmerz were in difficulties in ascribing a cause to the pain. This was due primarily to the fact that ovulation was thought to be closely related temporally to the onset of menstruation. It is now known from both direct and indirect evidence that ovulation occurs at some moment in the middle of the cycle. Intermenstrual pain, like changes in hormone excretion in the urine, physical changes in the cervical mucus, electrical potential changes, and so on, is obviously an indication of some alteration in the reproductive tract, and may be accepted as further evidence that ovulation occurs in the middle of the cycle.

The cause of the pain is still obscure. It is abolished by ovariectomy, but is not affected by operations that interfere with nervous pathways from the uterus. Painful tubal contractions may, however, be a possible explanation.

If, as the evidence suggests, the pain is connected with ovarian changes, the immediate cause may be either the pressure of a distending follicle just before ovulation or the actual rupture of the follicle.

It seems probable that the pain gives a closer indication of the time of ovulation in those women who are aware of it than any other method. In view of the experience of McSweeny and Wood (1940) that 21 out of 134 women could identify some discomfort in the mid-cycle, careful questioning about the mittelschmerz of patients who attend fertility clinics would seem to be worth while. Cases have certainly been reported (Wharton and Henriksen, 1936) in which the pain had been severe enough to prevent intercourse and in which advice to disregard the pain was immediately followed by conception.

Summary

The cyclical occurrence of intermenstrual pain (mittelschmerz) has been followed for 4½ years in a married woman aged 28.

The onset of the pain is closely correlated with changes in the waking oral temperature, and is taken to be a reliable index of ovulation.

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SYNDROME OF DIAPHRAGMATIC HERNIA AND ANAEMIA

BY

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No medical or surgical disease presents a clinical symptomatology so varied and unstable as that of congenital or acquired diaphragmatic hernia. Harrington (1945) studied 320 cases of oesophageal hiatus hernia and found that an average of three previous erroneous diagnoses had been made before the correct diagnosis was established. In order of frequency the most common erroneous diagnoses were: cholecystitis, cholelithiasis, gastric ulcer, secondary anaemia, duodenal ulcer, hyperacidity, cardiac disease, carcinoma of the cardia, stricture of the oesophagus, appendicitis, and intestinal obstruction. Chevallier and Danel (1944) reported that diaphragmatic hernia was commonly associated with anaemia.

Katsigras (1946) reviewed the published reports of 955 cases of oesophageal hiatus hernia and observed that anaemia was associated with the hernia in 80 cases, a proportion of 8.3%.

In my view (Codounis, 1946) diaphragmatic hernia can provoke the appearance of microcytic or hypochromic anaemia, or of macrocytic or hyperchromic anaemia. The personal case here described appears to be unique in medical literature. A severe anaemia persisted for 24 years, as did the diaphragmatic hernia. At first there was a microcytic anaemia and later macrocytic anaemia.

Case Record

J. A., a man of 60, had previously suffered from malaria and jaundice. He had three children in good health, two born after the beginning of the anaemia. His present illness started in April, 1922. After an emotional disturbance he had been feeling increasingly weak, tired, and anxious. His skin was pale and his eyes yellowish. These symptoms, with anorexia and loss of weight, became more serious, and he consulted Professor Schlesinger in Vienna, who diagnosed hypochromic anaemia and prescribed iron and a change of climate.

Phase of Microcytic Anaemia.—After three months' rest at Semmering J. A. returned feeling better. In December, 1922, pallor and progressive weakness reappeared, with vomiting, nausea, and epigastric swelling after meals. In February, 1923, he went to Vienna to consult Dr. Eppinger, who diagnosed Banti's disease and advised splenectomy. *X*-ray examination of the gastro-intestinal tract revealed no abnormality—probably due to a technical defect.

J. A. later went to France, where the diagnosis of hypochromic anaemia was confirmed. After four months' rest in the country he came home in good health and noticed no symptoms during the year 1923.

In 1924, after the same clinical and haematological symptoms and some loss of weight (100 kg. to 82 kg.), he returned again to France and consulted Dr. P. E. Weill, who confirmed the diagnosis of hypochromic anaemia. The patient was given iron and liver extracts, which improved his condition. His red cell count fell to 3,000,000 per c.mm. in 1925, and Dr. Weill gave him a blood transfusion, after which the improvement was nearly complete. Between 1926 and 1938, during which twelve years he had iron therapy and a change of air each summer, the patient was free from symptoms and lost no more weight. His usual weight was 100 kg., which was considered normal in relation to his height.

After an attack of influenza in November, 1938, J. A. felt very weak and dizzy. There was marked pallor of the skin